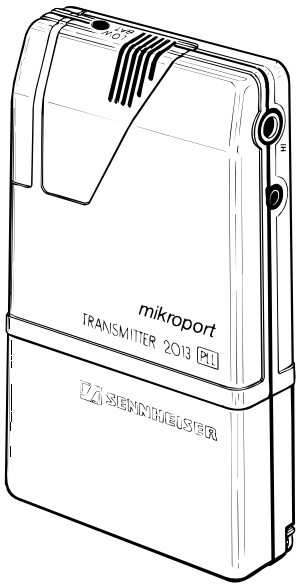
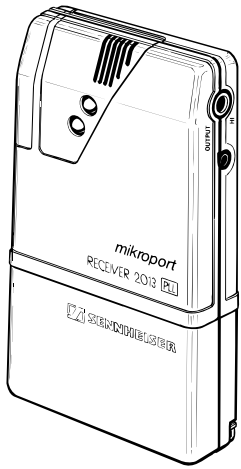
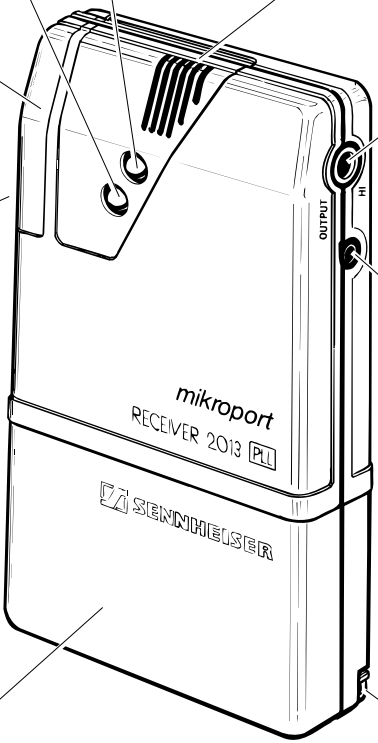
GEBRAUCHSANLEITUNG
INSTRUCTIONS FOR USE
INSTRUCTIONS POUR L'USAGE
ISTRUZIONI PER L'USO
MODO DE EMPLEO
GEBRUIKSAANWIJZING
BRUKSANVISNING

SYSTEM 2013 PLL





EK 2013 PLL



TRANSMISSION INDICATOR LAMP

RECEPTION AND BATTERY INDICATOR LAMP

BUILT-IN MICROPHONE

LOCKABLE COVER

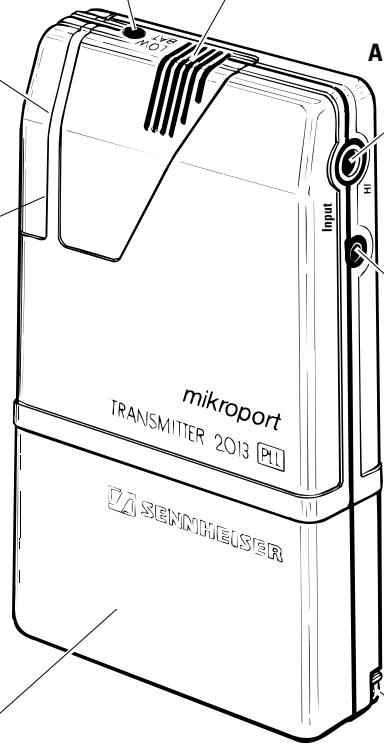
OUTPUT JACK FOR CONNECTION TO HEARING AID

CHANNEL SELECTOR SWITCH FOR UP TO 16 FREELY-SELECTABLE FREQUENCIES

HEADPHONE OUTPUT JACK

INTERCHANGEABLE STANDARD OR RECHARGEABLE BATTERY PACK

CHARGING CONTACT FOR CHARGING IN CHARGING UNIT L 2013 (ONLY ON RECHARGEABLE BATTERY PACK)



BATTERY INDICATOR LAMP

BUILT-IN MICROPHONE

LOCKABLE COVER

CONNECTION FOR ADDITIONAL DEVICES, E.G. CASSETTE RECORDER

CHANNEL SELECTOR SWITCH FOR UP TO 16 FREELY-SELECTABLE FREQUENCIES

CONNECTION FOR ADDITIONAL MICROPHONE MKE 2013

INTERCHANGEABLE STANDARD OR RECHARGEABLE BATTERY PACK

CHARGING CONTACT FOR CHARGING IN CHARGING UNIT L 2013 (ONLY ON RECHARGEABLE BATTERY PACK)

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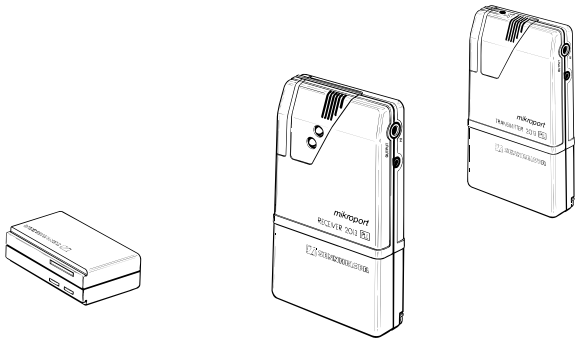


The System 2013 PLL enables the successful integration of people with hearing problems in schools and universities, at the workplace and during leisure activities.

The design and control details have been optimally adapted to this target group. Operation is simple and easy to learn. The units are small, light-weight and inconspicuous.

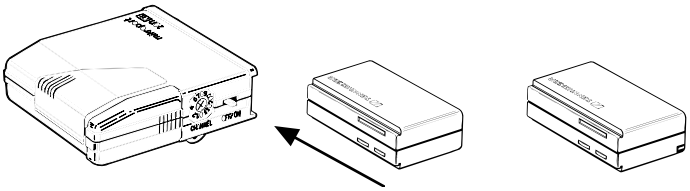
Units

- Transmitter SK 2013 PLL for the speaker
- Receiver EK 2013 PLL for the hearing impaired

Operating principle

The speaker, e.g. the instructor, wears the Transmitter SK 2013 PLL. The hearing impaired person wears the Receiver EK 2013 PLL. Headphones or a connecting cable to hearing aids can be connected to the EK 2013 PLL. The student can now hear the instructor as if he/she were sitting directly next to him/her - without wires and with retained freedom of movement. For the time during which the instructor speaks, the surrounding noises are considerably reduced. If the instructor is not speaking, the hearing aid or the microphone built into the EK 2013 PLL is completely effective; now fellow students can be heard. Yet the dialogue between the instructor and the student is always given priority.

The System 2013 PLL also remains a dependable aid under difficult conditions. The transmitting output reaches over great distances. Loud secondary noises and poor room acoustics can be faded out with the use of the additional microphone MKE 2013 on the Transmitter SK 2013 PLL. The wide range of accessories allows connection of the receiver to nearly any type of hearing aid; the connection to the hearing aid can be either electrical or inductive.



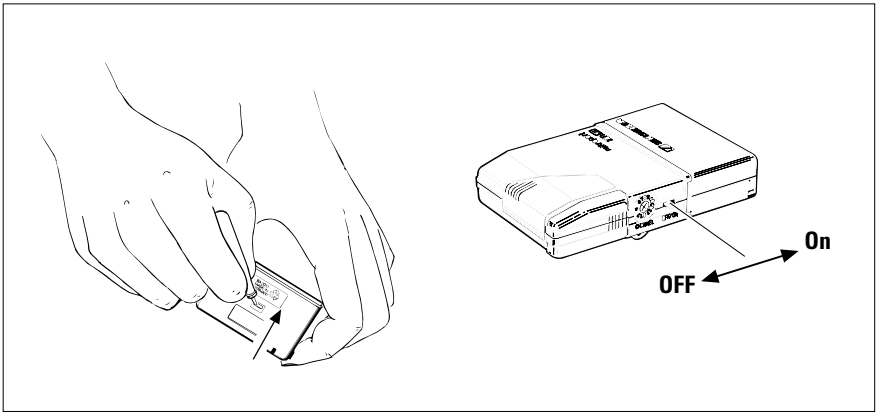
SK 2013 PLL or EK 2013 PLL **B 2013** **BA 2013**

The Transmitter SK 2013 PLL and the Receiver EK 2013 PLL are supplied with current by attachable RECHARGEABLE battery packs, type BA 2013. These battery packs are charged over night separately or in conjunction with their unit in the Dual Charging Unit L 2013. One battery pack has sufficient power for a normal working day (up to 12 hours). It is completely recharged over night.

Standard (non-rechargeable) battery packs allow operation far from an electrical system (maximum operating time: over 40 hours). They replace the rechargeable battery packs.

Common characteristics for transmitter and receiver

- up to 40 hour operating time, interchangeable standard and rechargeable battery pack
- built-in microphone in transmitter and receiver



Inserting battery pack

Two batteries (AA size) are inserted in the removable base compartment (same for transmitter and receiver). The battery compartment lock (see diagram) can be easily pressed open with a screwdriver or a similar pointed instrument.

Operation with rechargeable batteries

The RECHARGEABLE battery pack BA 2013 is recommended for daily use. The battery pack is slid onto the base of the transmitter or receiver in the same manner as the standard battery pack. The RECHARGEABLE batteries are recharged in the Dual Charging Unit L 2013.

Switching on/securing on clothing

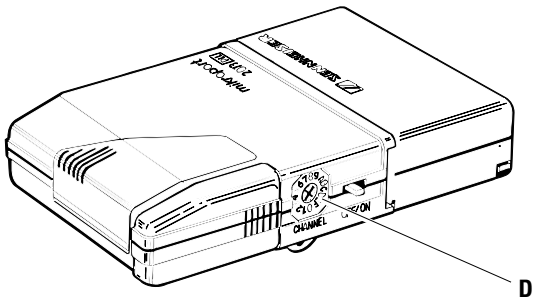
To switch the unit on, slide the ON/OFF switch on the transmitter or receiver **downward**.

The transmitter or receiver is secured on the body with the neck strap and the retaining plate. The transmitter or receiver can also be clipped onto a shirt or belt with the attached clip.

List of available transmission/reception ranges

EK/SK 2013-6-D	8 m frequency band	36.64-37.98 MHz
EK/SK 2013-6-1	8 m frequency band	30-36 MHz
EK/SK 2013-6-2	8 m frequency band	35-40 MHz
EK/SK 2013-6-3	8 m frequency band	39-45 MHz
EK/SK 2013-8	4 m frequency band	72.025-75.975 MHz
EK/SK 2013-9	2 m frequency band	173.350-175.02 MHz

Frequency selection

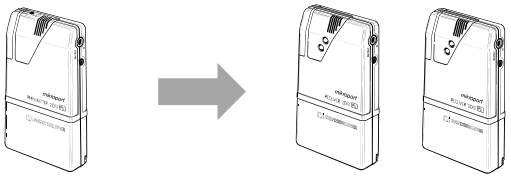


Setting channels on transmitter and receiver

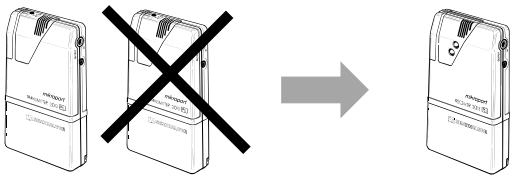
The transmission frequencies are set with the rotary switch (**D**) on the transmitter and receiver. The assignment of a switch position to a frequency is listed on the back of the unit on the information plate. Depending on the model, up to 16 frequencies are available. This allows multi-channel operation, e.g. in schools.

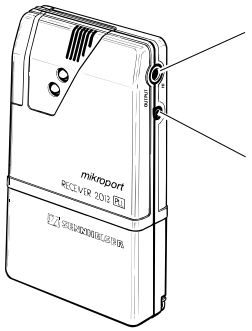
Important information:

- The transmitter and receiver of one transmission unit must be set to the same frequency!
- **One transmitter** can be used **with several receivers** set to the same frequency.



- **One receiver cannot be used with several transmitters** set to one frequency! This type of incorrect setting can be noticed from crackling and chirping noises at the receiver.




3.5 mm dia. Stereo jack
High-level output (2 x 0.7 V / 32 Ω)
2.5 mm dia. Stereo jack
Low-level output (2 x 3 mV / 2 kΩ)
mikroport
RECEIVER 2013
EZI SENNHEISER

Characteristics

- Up to 16 PLL-controlled frequencies
- Highly visible indicator lamp for all important functions
- Child-proof due to lockable cover of adjustment elements
- Integrated automatic fade-in feature
- Built-in microphone. The receiver becomes a hearing aid if required. - even without additional accessories -

Connection possibilities on receiver EK 2013 PLL

There are two stereo cinch jacks on the left side of the unit: a large jack with 3.5 mm dia. and a small jack with 2.5 mm dia.

Only stereo cinch plugs may be inserted into the two jacks! Mono plugs lead to malfunction or short circuit. Mono headphones must be equipped with stereo cinch plugs.

Integrated antenna

In both jacks the inserted cable is simultaneously used as an antenna. Only use original Sennheiser cables!

Operation on hearing aid with audio input

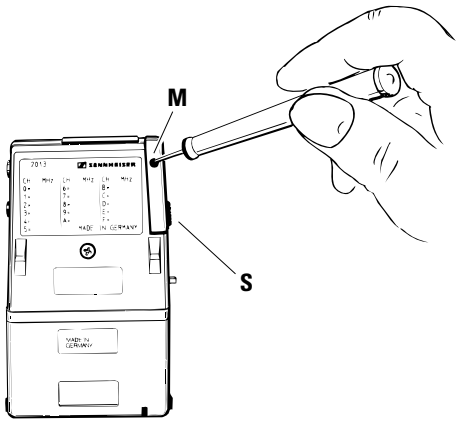
The small jack (2.5 mm dia.) supplies the output signal for a hearing aid with an audio input. Hearing aid dealers carry suitable connection cables.
(also see „**CABLES**“)

Operation on hearing aid without audio input

The „Tele-Loop“ ETZ 1011 or the Induction Disc EZI 120 for hearing aids without an audio input is connected to the large jack (3.5 mm dia.).

Operation with headphones

Stereo headphones (impedance > 32 Ω) are connected to the large jack.



Lockable cover on receiver

In order to reach the operating elements, a slide (**S**) is located on the right side of the unit. This protects the operating elements against unauthorized or accidental use. It is secured with a set screw (**M**), which is **screwed in** completely in order to open the slide.

After removing the slide two potentiometers are accessible:

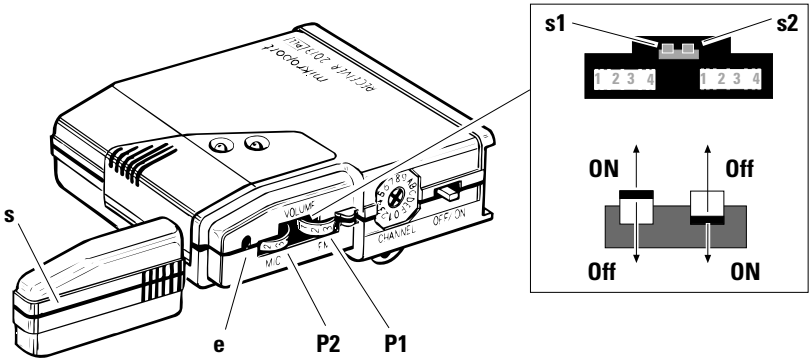
- The lower potentiometer (**P1**) adjusts the receiver volume, i.e. regulates the volume of the signal from the speaker.
- The upper potentiometer (**P2**) adjusts the basic volume of the built-in microphone.

Automatic fade-in and microphone adjustment

The receiver is equipped with an automatic fade-in feature. The connected hearing aid microphone or the microphone built into the receiver are turned down for the duration of speech transmission. This enables the signal of the speaker to be given preference at the wearer of the receiver.

In addition, the automatic fade-in is complimented by a speech filter. As a result, disturbing noises (doors banging etc.) do not trigger the automatic fade-in feature.

The automatic fade-in and the basic volume of the faded-in microphone can be set separately.



Setting automatic fade-in

This adjustment is made exclusively by the hearing aid dealer!

An adjuster (**E**) for the reduction depth of the automatic fade-in is located at the top behind a hole in the housing. It can be turned with a 1.6 mm dia. screwdriver. Turning clockwise increases the reduction depth of the connected hearing aid microphones.

Switching automatic fade-in and built-in microphone on/off

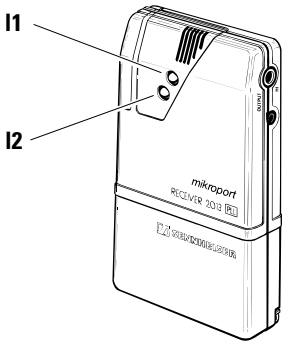
This adjustment is made exclusively by the hearing aid dealer!

Two toggle switches (**S1/2**) are accessible in the unit between the potentiometers for switching on the automatic fade-in and microphone. They can be actuated with a small screwdriver (2.6 mm).

- If the switch (**S2**) is tipped toward the back of the unit, the automatic fade-in feature is switched on.
- If the switch (**S1**) is tipped toward the upper side of the unit, the built-in microphone is switched on.

  (The EK 2013 PLL is delivered with this setting).

Indicator lamps on the receiver EK 2013 PLL



Two LED indicator lamps are located on the front of the unit.

Automatic fade-in, green led

L1 indicates that the acoustic signal is being correctly transmitted. If it lights up, the automatic fade-in feature is activated. The transmission path has preference over the surrounding noises transmitted by the built-in microphone.

In addition, **L1** also serves as an adjustment aid for the microphone sensitivity at the Transmitter SK 2013 PLL. (Also see Page 14)

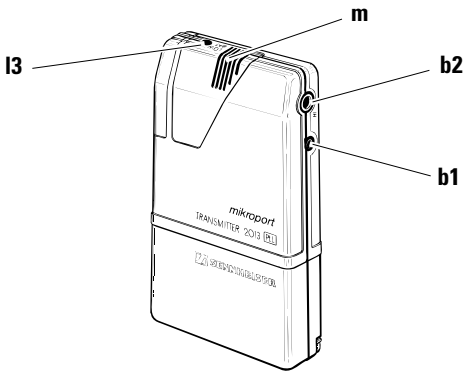
Squelch and battery check, red led

L2 has the dual function „s**quelch indicator**“ (activated squelch) and „**LowBat**“ **indicator** for battery check with tendency recognition:

- **constant red light** Squelch switched on = no reception
- **flashing red light** **slow flashing:** The battery voltage is dropping! However, there is still contact. **The RECHARGEABLE or standard battery pack must be changed in approx. 15 minutes.**

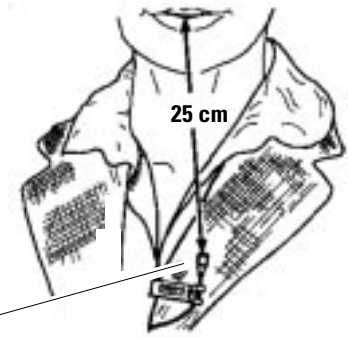
  rapid flashing: The battery voltage is no longer sufficient for operation. **ATTENTION: The receiver is not functioning!**

Both indicator lamps are arranged on the front of the receiver so that they can also be **dependably seen over a greater distance** by the person equipped with the transmitter. In this way it is easy to ascertain whether the speech connection exists.



Connection possibilities

Either the built-in electret microphone can be used or the separate microphone MKE 2013 (see also „**ACCESSORIES**“ on Page **19**) connected to the 2.5 mm dia. cinch jack (**B1**).

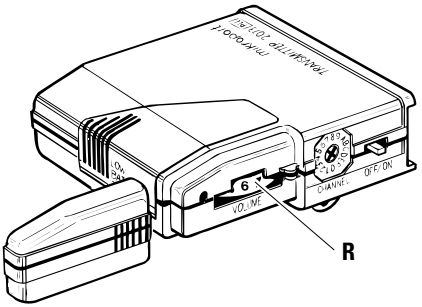


The 3.5 mm dia cinch jack (**B2**) is available for the connection of high-level sound sources, such as tape recorders, TV and Hi-Fi components.

The connection cable of the connected additional microphone MKE 2013 acts as an antenna. If the additional microphone MKE 2013 is not used, the included additional antenna must be inserted in the microphone jack.

Indicator lamps

The transmitter is equipped with a red indicator LED (**L3**) for monitoring the battery output. **The end of the operating period is announced with flashing** approx. 15 minutes before the end of operation, so that there is sufficient time to replace the RECHARGEABLE or standard battery pack.



Setting microphone sensitivity on transmitter SK 2013 PLL

The microphone sensitivity should be set high enough on the regulator (**R**) that, on the one hand, the green LED on the Receiver EK 2013 PLL does not go out during normal speaking and, on the other hand, low enough that normal surrounding noise does not activate the LED display.

The optimum setting is usually between 5 and 7.

Accessories

EZU 2013 Neck strap with carrying plate for simple, safe securing on body (Art. No. 03438)

EZU 2013-1 Waist belt for use with neck strap (Art. No. 93439)

L 2013 Automatic charging unit for charging 2 RECHARGEABLE battery packs BA 2013 alone or with Transmitter/Receiver SK/EK 2013 PLL. (Art. No. 03324)

NT 2013 Power supply unit for charging unit, operates on 230 V. (Art No. 03433)

NT 2013-120 Power supply unit for charging unit, operates on 120 V. (Art. No. 03434)

NT 2013-UK Power supply unit for charging unit, operates on 240 V (GB). (Art. No. 03435)

MKE 2013 Clip-on microphone for Transmitter SK 2013 PLL (Art. No. 03323)

BA 2013 Additional rechargeable battery pack (Art. No. 03436)

B 2013 Battery box, operation of system far from charging possibility (Art. No. 03437)

Cables

KAB - 1 E Binaural connection cable for two hearing aids with audio input. Length: 80 cm (Art. No. 03440)

KAB - E Binaural connection cable for two hearing aids with audio input. Length: 40 cm (Art. No. 03441)

KA - 1 E Monaural connection cable for one hearing aid with audio input. Length: 80 cm (Art. No. 03442)

KA - E Monaural connection cable for one hearing aid with audio input. Length: 40 cm (Art. No. 03443)

KAB - 1K Binaural connection cable with two Sennheiser mini-plugs for connection of Sennheiser headphones. Length: 80 cm (Art. No. 03444)

KAB - K Binaural connection cable with two Sennheiser mini-plugs for connection of Sennheiser headphones. Length: 40 cm (Art. No. 03445)

KA - 1 K Monaural connection cable with one Sennheiser mini-plug for connection of Sennheiser headphones. Length: 80 cm (Art. No. 03446)

KA - K Monaural connection cable with one Sennheiser mini-plug for connection of Sennheiser headphones. Length: 40 cm (Art. No. 03447)

Technical data

Transmitter SK 2013 PLL

Frequency range	**SK 2013-6-D**	8 m frequency band	36.64-37.98 MHz
	SK 2013-6-1	8 m frequency band	30-36 MHz
	SK 2013-6-2	8 m frequency band	35-40 MHz
	SK 2013-6-3	8 m frequency band	39-45 MHz
	SK 2013-8	4 m frequency band	72.025-75.975 MHz
	SK 2013-9	2 m frequency band	173.350-175.02 MHz
Frequency preparation		Phase Lock Loop (PLL) Technique, 16 channels	
Frequency constancy		± 2 kHz, -10° to +55° C	
HF output power		10 mW	
HF radiation power		1 mW	
Perturbing radiation power		< 4 nW	
Modulation type		FM	
Rated lift/peak lift		± 8 kHz / ± 10 kHz	
Channel grid/switching band width	**SK 2013-6-D**	40 kHz / 2.34 MHz	
	SK 2013-6-1	40 kHz / 2 MHz	
	SK 2013-6-2	40 kHz / 2 MHz	
	SK 2013-6-3	40 kHz / 2 MHz	
	SK 2013-8	25 kHz / 4 MHz	
	SK 2013-9	25 kHz / 2 MHz	
LF transmission range		40 - 16,000 Hz	
Nonlinear distortion factor at 1 kHz and rated lift		typ. 1 %	
LF sensitivity min./max.		4 mV/44 mV - Microphone input 150 mV/2.65 V - Aux. input	
Input resistance		3kΩ - Microphone input 100 kΩ - Aux. input	
Operating voltage		2.4 V	
Current consumption		approx. 55 mA	
Operating time		> 12 hours with RECHARGEABLE battery pack BA 2013 > 36 hours with 2 x Alkaline AA cells in B 2013	
Battery check		red LED for operating voltage < 2.2 V	
Dimensions		18 x 58 x 95 mm	
Weight (incl. B 2013)		approx. 130 g	
German ZZF Certification No.		A 014 926 B ME (only -6)	
Scope of delivery		1 Transmitter SK 2013 PLL 1 Battery compartment B 2013 1 Projection antenna 44891	

Also included in the System 2013 (set of transmitter and receiver) are two securing plates with retaining straps. The System 2013 is supplied in a sturdy transport and storage carrying case.

Receiver EK 2013 PLL

Frequency range	**EK 2013-6-D**	8 m frequency band	36.64-37.98 MHz
	EK 2013-6-1	8 m frequency band	30-36 MHz
	EK 2013-6-2	8 m frequency band	35-40 MHz
	EK 2013-6-3	8 m frequency band	39-45 MHz
	EK 2013-8	4 m frequency band	72.025-75.975 MHz
	EK 2013-9	2 m frequency band	173.350-175.02 MHz
Frequency preparation		Phase Lock Loop (PLL) Technique, 16 channels	
Modulation type		FM	
Rated lift/peak lift ± 8 kHz / ± 12 kHz			
Channel grid/switching band width		**EK 2013-6-D**	40 kHz / 2.34 MHz
		EK 2013-6-1	40 kHz / 2 MHz
		EK 2013-6-2	40 kHz / 2 MHz
		EK 2013-6-3	40 kHz / 2 MHz
		EK 2013-8	25 kHz / 4 MHz
		EK 2013-9	25 kHz / 2 MHz
Sensitivity (measured via artificial antenna)		typ. 0.5 µV for 26 dB S/N	
Neighboring channel selection		typ. 70 dB	
LF transmission range		40 - 16,000 Hz	
Nonlinear distortion factor at 1 kHz and rated lift		typ. 1 %	
LF output 1:	3.5 mm dia. jack	High:	2 x 0.7 V / 32 U
LF output 2:	2.5 mm dia. jack	Low (hearing aids):	2 x 3 mV / 2 kΩ
Impedance at LF output 2 for connection of hearing aids			
in normal operation		3 kΩ	
with activated automatic fade-in		80 U to 1 kU adjustable	
Operating voltage 2.4 V Current consumption		approx. 45 mA	
Operating time pack		> 14 hours with RECHARGEABLE battery	
		BA 2013 > 40 hours with 2 x Alkaline AA cells in B 2013	
Battery check		red LED for operating voltage < 2.2 V	
Dimensions		18 x 58 x 95 mm	
Weight (incl. B 2013)		approx. 130 g	
German ZZF Certification No.		A 014 926 B ME (only -6)	
Scope of delivery		1 Receiver EK 2013 PLL 1 Battery compartment B 2013	

Not responsible for errors. Subject to change without notice.

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